



**SLOVENSKI STANDARD**  
**SIST EN 60904-8:2001**

**01-september-2001**

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**Fotonapetostne naprave – 8. del: Merjenje spektralnega odziva fotonapetostne (PV) naprave**

Photovoltaic devices -- Part 8: Measurement of spectral response of a photovoltaic (PV) device

Photovoltaische Einrichtungen -- Teil 8: Messung der spektralen Empfindlichkeit einer photovoltaischen (PV) Einrichtung

Dispositifs photovoltaïques -- Partie 8: Mesure de la réponse spectrale d'un dispositif photovoltaïque (PV)

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**Ta slovenski standard je istoveten z: EN 60904-8:1998**

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**ICS:**

27.160      Ú[ } } æ } ^i\* ðe      Solar energy engineering

**SIST EN 60904-8:2001**      **en**

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EUROPEAN STANDARD  
 NORME EUROPÉENNE  
 EUROPÄISCHE NORM

**EN 60904-8**

April 1998

ICS 27.160

English version

**Photovoltaic devices**  
**Part 8: Measurement of spectral response**  
**of a photovoltaic (PV) device**  
 (IEC 60904-8:1998)

Dispositifs photovoltaïques  
 Partie 8: Mesure de la réponse spectrale  
 d'un dispositif photovoltaïque (PV)  
 (CEI 60904-8:1998)

Photovoltaische Einrichtungen  
 Teil 8: Messung der spektralen  
 Empfindlichkeit einer photovoltaischen  
 (PV) Einrichtung  
 (IEC 60904-8:1998)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
 Comité Européen de Normalisation Electrotechnique  
 Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

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### Foreword

The text of document 82/185/FDIS, future edition 2 of IEC 60904-8, prepared by IEC TC 82, Solar photovoltaic energy systems, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60904-8 on 1998-04-01.

The following dates were fixed:

- latest date by which the EN has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 1999-01-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2001-01-01

Annexes designated "normative" are part of the body of the standard.  
In this standard, annex ZA is normative.  
Annex ZA has been added by CENELEC.

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### Endorsement notice

The text of the International Standard IEC 60904-8:1998 was approved by CENELEC as a European Standard without any modification.

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**Annex ZA (normative)****Normative references to international publications  
with their corresponding European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60904-1	1987	Photovoltaic devices Part 1: Measurement of photovoltaic current-voltage characteristics	EN 60904-1	1993
IEC 60904-2	1989	Part 2: Requirements for reference solar cells	EN 60904-2	1993
IEC 60904-3	1989	Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data	EN 60904-3	1993
IEC 61646	1996	Thin-film terrestrial photovoltaic (PV) modules Design qualification and type approval	EN 61646	1997

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**NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD**

**CEI  
IEC**

**60904-8**

Deuxième édition  
Second edition

1998-02

**Dispositifs photovoltaïques –  
Partie 8:  
Mesure de la réponse spectrale  
d'un dispositif photovoltaïque (PV)**

**STANDARD PREVIEW**  
**Photovoltaic devices –  
Part 8:**

**Measurement of spectral response  
of a photovoltaic (PV) device**

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
PRICE CODE

**J**

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For price, see current catalogue*

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## PHOTOVOLTAIC DEVICES –

Part 8: Measurement of spectral response  
of a photovoltaic (PV) device

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60904-8 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This second edition cancels and replaces the first edition (monolingual, English) published in 1995 and constitutes a technical revision.

The text of this standard is based on the following documents:

FDIS	Report on voting
82/185/FDIS	82/197/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.



## PHOTOVOLTAIC DEVICES –

### Part 8: Measurement of spectral response of a photovoltaic (PV) device

#### 1 Scope

This part of IEC 60904 gives guidance for the measurement of the relative spectral response of both linear and non-linear photovoltaic devices. This is only applicable to single-junction devices.

#### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60904. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 60904 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60904-1:1987, *Photovoltaic devices – Part 1: Measurement of photovoltaic current-voltage characteristics*

SIST EN 60904-8:2001

IEC 60904-2:1989, *Photovoltaic devices – Part 2: Requirements for reference solar cells*

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IEC 60904-3:1989, *Photovoltaic devices – Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data*

IEC 61646:1996, *Thin-film terrestrial photovoltaic (PV) modules – Design qualification and type approval*

#### 3 Specific requirements for thin-film devices

##### 3.1 Preliminary assessment of stability

Before the spectral response measurement of thin-film devices, the device under test shall be stabilized (if necessary), as specified in the light soaking test procedure (see IEC 61646).

##### 3.2 Measurement under white bias light

The spectral response measurement shall be done under white bias light, similar to the AM 1,5 relative spectral distribution, at such a level that the spectral response does not significantly change when the bias level is reduced by 50 %.